

## Dr. Lauren S. Waters

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### EDUCATION AND PROFESSIONAL POSITIONS

#### University of Wisconsin Oshkosh

Associate Professor of Chemistry (2019 – present)

Assistant Professor of Chemistry (2012 – 2019)

#### National Institutes of Health

Pharmacology Research Associate (PRAT) Postdoctoral Fellow (2007 – 2012)

Postdoctoral Advisor: Dr. Gisela Storz, Ph.D.

#### Massachusetts Institute of Technology

Ph.D. in Molecular Biology (2007)

Graduate Advisor: Dr. Graham Walker, Ph.D.

#### Cornell University

B.A. in Biochemistry (2000)

### RESEARCH EXPERIENCE

#### Associate Professor of Chemistry

*University of Wisconsin – Oshkosh, Oshkosh, WI* (2012 – present)

Studying bacterial small proteins, characterizing the activity and regulation of manganese homeostasis proteins in *Escherichia coli*, and identifying new functional signal peptides in bacteria.

#### Pharmacology Research Associate (PRAT) Postdoctoral Fellow with Dr. Gisela Storz

*National Institutes of Health, Bethesda, MD* (2007 – 2012)

Investigated the molecular mechanisms of regulatory RNAs and small proteins in the stress responses of *Escherichia coli*.

#### Graduate Research Assistant with Dr. Graham C. Walker

*Massachusetts Institute of Technology, Cambridge, MA* (2001 – 2007)

Studied DNA repair and mutagenesis in *Saccharomyces cerevisiae*. Used biochemical and genetic approaches to characterize the mutagenic DNA polymerase Rev1.

#### Undergraduate Research Assistant with Dr. Jeffrey Roberts

*Cornell University, Ithaca, NY* (1998 – 2000)

Employed chromatin immunoprecipitation (ChIP) to analyze the protein-protein and protein-DNA interactions of the bacteriophage lambda Q protein and RNA polymerase.

#### Summer Undergraduate Research Assistant with Dr. Vivian MacKay and Dr. Linda Breeden

*Fred Hutchinson Cancer Research Center, Seattle, WA* (Summer 1999)

Helped to investigate regulation of expression of *CLN3* and timely entry of yeast into the cell cycle.

#### Summer Undergraduate Research Assistant with Dr. Peggy Porter

*Fred Hutchinson Cancer Research Center, Seattle, WA* (Summer 1998)

Aided in the correlation of expression of cell cycle genes with breast cancer progression.

## FELLOWSHIPS AND GRANTS

“Bacterial Manganese Homeostasis”, **NIH R15 AREA Grant**, 1R15GM137249-01, Funded (2020 – 2024)

“IMAGE Grant-Writing Workshop”, **Faculty Development Grant** (FDW876), Off-Campus Program, University of Wisconsin Oshkosh (2018)

“Manganese Homeostasis in Bacteria: Characterization of an Mn-Regulated Small Protein and Identification of Novel Mn Exporters” **Research Corporation Cottrell Scholar Award**, Grant #23595, Funded (2016 – 2020)

“Manganese Homeostasis in Bacteria” (FDE177), **External Matching Grant**, University of Wisconsin Oshkosh, Funded 2016.

“Characterization of Two New Manganese Homeostasis Proteins in *Escherichia coli*” **Research Corporation Cottrell College Science Award (Single Investigator)**, Grant #22658, Funded (2014 – 2017)

“Characterization of Two New Manganese Homeostasis Proteins in *Escherichia coli*” (FDE172), **External Matching Grant**, University of Wisconsin Oshkosh, Funded 2014

“Finding Specific Proteins That Bind to the Small Protein MntS in the Model Bacterium *Escherichia coli*” **Student-Faculty Collaborative Grant**, University of Wisconsin Oshkosh, Funded and Declined due to student recipient of an additional Proteomics and Functional Genomics Scholarship (2014)

“Council on Undergraduate Research Institute Workshop”, **Faculty Development Grant** (FDW842), Off-Campus Program, University of Wisconsin Oshkosh (2012)

**Pharmacology Research Associate (PRAT) Fellowship**, National Institutes of Health (2008 – 2011)

**Fred Hutchinson Summer Research Program**, Fred Hutchinson Cancer Research Center (1998, 1999)

## PUBLICATIONS

† denotes mentored student

Wright Z†, Seymour S†, Paszczak K†, Truttmann T†, Senn K†, Stilp S†, Jansen N†, Gosz M†, Goeden L†, Anantharaman V, Aravind L, and **Waters LS**. (2023) “The small protein MntS evolved from a signal peptide and acquired a novel function regulating manganese homeostasis in *Escherichia coli*” Submitted to *Molecular Microbiology*. Preprint available at: DOI: 10.1101/2023.06.02.543501

Martin JE, **Waters LS**. (2022) “Regulation of Bacterial Manganese Homeostasis and Usage During Stress Responses and Pathogenesis.” *Frontiers in Molecular Biosciences* **Jul** (9) 945724.

**Waters, LS**. (2022) “A new class of metal-sensing RNA.” *Nature Chemical Biology* **Aug** (18) 798-799.

Cohen, SC, Hashmi SM, Jones AD, Lykourinou V, Ondrechen MJ, Sridhar S, van de Ven AL, **Waters, LS**, and Beuning PJ. (2021) Adapting undergraduate research to remote work to increase engagement. *The Biophysicist*. doi: <https://doi.org/10.35459/tbp.2021.000199>

**Waters LS**. (2020) Bacterial manganese sensing and homeostasis. *Current Opinion in Chemical Biology* **Apr** (55) 96-102.

Zeinert RZ†, Martinez E†, Schmitz J†, Katherine Senn†, Bakhtawar Usman†, Anantharaman V, Aravind L\*, **Waters LS\***. (2018) Structure-function analysis of manganese exporter proteins across bacteria. *Journal of Biological Chemistry* **293** (15) 5715-5730. \*corresponding authors

Dambach M, Sandoval M†, Updegrove TB, Anantharaman V, Aravind, L, **Waters LS\***, Storz G\*. (2015) The ubiquitous *yybP-ykoY* riboswitch is a manganese-responsive regulatory element. *Molecular Cell* **57** (6) 1099-109. \*corresponding authors

Martin JE, **Waters LS\***, Storz G, Imlay JA\*. (2015) The *Escherichia coli* small protein MntS and exporter MntP optimize the intracellular concentration of manganese. *PLoS Genetics* **11** (3) e1004977. \* corresponding authors

**Waters LS**, Sandoval M†, Storz G. (2011) Expanding the Pathways of Metal Homeostasis: A Small Protein and Putative Efflux Pump are Part of the Manganese Regulon. *Journal of Bacteriology* **193** (21) 5887-97.

Beuning PJ, Chan S, **Waters LS**, Addepalli H, Ollivierre JN, Walker GC. (2009) Characterization of Novel Alleles of the *E. coli umuDC* genes Identifies Additional Interaction Sites of UmuC with the Beta Clamp. *Journal of Bacteriology* **191** (19) 5910-20.

**Waters LS**, Minesinger BK, Wiltrout ME, D'Souza S, Woodruff RV, Walker GC. (2009) Eukaryotic translesion polymerases and their roles and regulation in DNA damage tolerance. *Microbiology and Molecular Biology Reviews* **73** (1) 134-54.

**Waters LS**, Storz G. (2009) Regulatory RNAs in bacteria. *Cell* **136** (4) 615-28.

D'Souza S\*, **Waters LS\***, Walker GC. (2008) Novel conserved motifs in Rev1 C-terminus are required for mutagenic DNA damage tolerance. *DNA Repair* **7** (9) 1455-70. \*co-first authors

**Waters LS**, Walker GC. (2006) The critical mutagenic translesion DNA polymerase Rev1 is highly expressed during G2/M rather than S-phase. *Proceedings of the National Academy of Science* **103** (24) 8971-6.

MacKay VL, Mai B, **Waters L**, Breeden LL. (2001) Early cell cycle box-mediated transcription of CLN3 and SWI4 contributes to the proper timing of the G1-to-S transition in budding yeast. *Molecular and Cellular Biology* **21** 4140-8.

## ORAL PRESENTATIONS

† denotes mentored student, presenter is bolded

Zachary Wright †, Mackenzie Seymour†, Katherine Senn†, Taylor Truttmann†, Kalista Paszczak†, Samuel Stilp†, Nickolas Jansen†, Magdalyn Gosz †, Lindsay Goeden†, Nancy Lor†, Mollie Jentz†, **Lauren Waters**. (2023) "Evolution of a small protein from a signal peptide to acquire a new function regulating manganese homeostasis in *Escherichia coli*" Molecular Genetics of Bacteria and Phages Meeting, Madison, WI. (*Oral presentation*)

**Lindsay Goeden†**, Lauren Waters. (2023) "Manganese Homeostasis in *E. coli* Bacteria" University of Wisconsin Oshkosh Chemistry Seminar, Oshkosh, WI. (*Oral presentation*)

**Lauren Waters**. (2023) "A 7-Week Hypothesis-Based Biochemistry Lab CURE" Undergraduate Genetics Education Network (UGEN) 3<sup>rd</sup> Annual Virtual Workshop. (*Oral presentation*)

**Lauren Waters**. (2021) "Structure-function studies of MntS, a small protein with a big role in manganese homeostasis." NIH Lambda Lunch, Bethesda, MD (virtual). (*Oral presentation*)

**Lauren Waters.** (2021) “Structure-function studies of MntS, a small protein with a big role in manganese homeostasis.” Small Proteins, Big Questions, Virtual International Conference. *(Oral presentation)*

**Lauren Waters.** (2019) “Metal homeostasis in bacteria: the role of small proteins and transporters in manganese metabolism.” University of Wisconsin Oshkosh Biology Graduate Seminar, Oshkosh, WI. *(Oral presentation)*

**Lauren Waters.** (2019) “In-Class Activities for Use in Introductory Biochemistry Lecture Courses” Transforming Education in the Molecular Life Sciences ASBMB Educational Symposium, San Antonio, TX. *(Oral presentation)*

**Becca Amick†**, Lauren Waters. (2019) “Subcellular Localization of the Small Protein MntS in *Escherichia coli*.” University of Wisconsin Oshkosh Honors Thesis Symposium and Chemistry Seminar, Oshkosh, WI. *(2 Oral presentations)*

**Luke Seuffer†**, Lauren Waters. (2019) “The Curious Function of a Mysterious Protein, Alx, in *Escherichia coli*.” University of Wisconsin Oshkosh Chemistry Seminar, Oshkosh, WI. *(Oral presentation)*

**Lauren Waters.** (2018) “Research and teaching careers at primarily undergraduate institutions.” National Institutes of Health PRAT Fellowship Alumni Career Panel, Bethesda, MD. *(Oral presentation)*

**Lauren Waters.** (2018) “Metal homeostasis in bacteria: the role of small proteins and transporters in manganese metabolism.” National Institutes of Health Small Protein Symposium, Bethesda, MD. *(Oral presentation)*

**Lauren Waters.** (2018) “Metal homeostasis in bacteria: the role of small proteins and transporters in manganese metabolism.” University of Wisconsin Oshkosh Chemistry Department Seminar, Oshkosh, WI. *(Oral presentation)*

**Lauren Waters.** (2018) “Metal homeostasis in bacteria: from manganese-sensing riboswitches to novel manganese exporters.” Center for Biomolecular Sciences and the Department of Medicinal Chemistry Seminar, University of Illinois Chicago, Chicago, IL. *(Oral presentation)*

Katherine Senn†, Jennifer Schmitz†, Eli Martinez†, Rilee Zeinert†, Luke Seuffer†, **Lauren Waters.** (2018) “Bacterial Manganese Homeostasis: Structure-Function Analysis of an Enigmatic Small Protein, MntS, and Several Families of Manganese Transporters.” Molecular Genetics of Bacteria and Phages Meeting, Madison, WI. *(Oral presentation)*

**Nathan Witman†**, Lauren Waters. (2018) “Determining the function of a small protein involved in the regulation of manganese homeostasis in *E. coli*.” University of Wisconsin Oshkosh Honors Thesis Symposium and Chemistry Seminar, Oshkosh, WI. *(2 Oral presentations)*

**Katherine Senn†**, Lauren Waters. (2017) “Manganese Homeostasis in Bacteria: Investigating the Structure and Activity of the *E. coli* Small Protein MntS.” University of Wisconsin Oshkosh, Honors Thesis Symposium and Chemistry Seminar, Oshkosh, WI. *(2 Oral presentations)*

**Lauren Waters.** (2017) “Regulation of manganese metabolism in bacteria: from a small RNA to a small protein to riboswitches.” Metals in Biology Gordon Research Conference, Ventura, CA. *(Oral presentation)*

**Lauren Waters.** (2016) “Walker Lab 40<sup>th</sup> Anniversary.” Walker Lab 40<sup>th</sup> Anniversary Symposium, MIT, Cambridge, MA. *(Oral presentation)*

**Lauren Waters.** (2016) “Higher Education for Tomorrow” and “Manganese Homeostasis in Bacteria: Characterization of a Mn-Regulated Small Protein and Identification of Novel Mn Exporters.” Cottrell Scholars Conference *Building Bridges*, Westin La Paloma, Tucson, AZ. (*Oral presentation*)

**Lauren Waters.** (2016) “Metal homeostasis across bacteria: from RNA to proteins.” Concordia University Physical Sciences Seminar Series, Mequon, WI. (*Oral presentation*)

**Lauren Waters.** (2016) “Regulation of Mn metabolism in bacteria: from a small RNA to a small protein to riboswitches.” East Carolina University Seminar Series, Greenville, NC. (*Oral presentation*)

**Jennifer Schmitz†**, Lauren Waters. (2016) “Investigating Novel Manganese Exporters Controlled by Riboswitch Mechanisms in an Array of Bacterial Species” University of Wisconsin Oshkosh Honors Thesis Symposium and Chemistry Seminar, Oshkosh, WI. (*2 Oral presentations*)

**Lauren Waters.** (2015) “Regulation of Mn metabolism in bacteria: from a small RNA to a small protein to riboswitches.” University of Wisconsin Madison *E. coli* Club, Madison, WI. (*Oral presentation*)

**Lauren Waters.** (2015) “Regulation of Mn metabolism in bacteria: from a small RNA to a small protein to riboswitches.” Ohio University Research Seminar Series, Athens, OH. (*Oral presentation*)

**Eli Martinez†**, Lauren Waters. (2015) “Topological analysis of a manganese exporter protein, MntP, in *Escherichia coli*, and its response to Reactive Oxygen Species.” University of Wisconsin Oshkosh McNair Showcase, Oshkosh, WI. (*Oral presentation*)

Rilee Zeinert†, Taylor Truttmann†, Katherine Senn†, Patrick Miller†, **Lauren Waters.** (2015) “Metal Homeostasis in *E. coli*: the Predicted Manganese Chaperone, MntS, and the Manganese Exporter, MntP.” Wind River Conference on Prokaryotic Biology, Aspen Lodge, CO. (*Oral presentation*)

**Rilee Zeinert†**, Lauren Waters. (2014) “Elucidating the Structure and Function of MntP: A Manganese Export Protein.” University of Wisconsin Oshkosh Chemistry Seminar, Oshkosh, WI. (*Oral presentation*)

**Kelly Genskow†**, Lauren Waters. (2013) “The *Escherichia coli* Small Protein MntS and Its Role in Manganese Homeostasis.” University of Wisconsin Oshkosh Honors Thesis Symposium and Chemistry Seminar, Oshkosh, WI. (*2 Oral presentations*)

**Lauren S Waters.** (2012) “Regulation of Manganese Metabolism in *E. coli*: from small RNAs to small proteins to riboswitches.” University of Wisconsin Oshkosh Chemistry Department Seminar, Oshkosh, WI. (*Oral presentation*)

**Lauren S Waters**, Melissa Sandoval†, Gisela Storz. (2011) “Regulation of Manganese Metabolism in *Escherichia coli*: from small RNAs to small proteins to riboswitches.” PRAT Symposium, NIH, Bethesda, MD. (*Oral presentation*)

**Lauren S Waters**, Melissa Sandoval†, Gisela Storz. (2011) “Regulation of Manganese Metabolism in *Escherichia coli*: from small RNAs to small proteins to riboswitches.” Lambda Lunch Seminar Series, NIH, Bethesda, MD. (*Oral presentation*)

**Lauren Waters**, Mitsuoki Kawano, Gisela Storz. (2009) “Novel Ribosome-Associated Small RNA in *Escherichia coli*.” Molecular Genetics of Bacteria and Phages Meeting, Madison, WI. (*Oral presentation*)

**Lauren Waters**, Gisela Storz. (2008) “Characterization of the Unusual RyfD Small RNA.” Invited Research Seminar, MIT, Cambridge, MA. (*Oral presentation*)

**Lauren Waters**, Graham C. Walker. (2006) “Novel Cell Cycle Regulation of the Mutagenic Translesion DNA Polymerase Rev1.” Yeast Genetics and Molecular Biology Meeting, Princeton, NJ. (*Oral presentation*)

**Lauren Waters**, Graham C. Walker. (2005) “Unexpected Cell Cycle Regulation of the Translesion Polymerase Rev1: Implications for Mutagenesis.” Boston-area DNA Repair and Mutagenesis meeting, Boston, MA. (*Oral presentation*)

## POSTER PRESENTATIONS

† denotes mentored student, presenter is in bold

**Maggie Gosz†**, **Lindsay Goeden†**, Kylee Moore†, Lauren Waters. (2023) “Manganese Homeostasis in Bacteria: Identification of the Protein Binding between Small Protein MntS and Manganese Exporter MntP in *E. coli*” University of Wisconsin Oshkosh Celebration of Scholarship and Creative Activities, Oshkosh, WI (*Poster presentation*)

Katherine Senn†, Zachary Wright†, Mackenzie Seymour†, Kalista Paszczak†, Nick Jansen†, Magdalyn Gosz†, Elias Flor Martinez†, Doua Xiong†, Taylor Truttmann†, Adrian Landreth†, Mollie Jentz†, Nancy Lor†, Lindsay Goeden†, **Lauren Waters**. (2022) “The role of small proteins in metal homeostasis” Microbial Stress Responses Gordon Conference, Mt. Holyoke, MA. (*Poster presentation*)

**Mackenzie Seymour†**, Zachary Wright†, Lauren Waters. (2022) “Manganese Homeostasis in Bacteria: Interaction of the Small Protein MntS and Manganese Exporter MntP in *E. coli*.” University of Wisconsin Oshkosh Celebration of Scholarship and Creative Activities, Oshkosh, WI (*Poster presentation*)

**Mackenzie Seymour†**, **Zachary Wright†**, Lauren Waters. (2022) “Manganese Homeostasis in Bacteria: Interaction of the Small Protein MntS and Manganese Exporter MntP in *E. coli*.” ASBMB National Meeting, Philadelphia, PA and Research in the Rotunda, Madison, WI. (*2 Poster presentations*)

**Elias Flor Martinez†**, **Doua Xiong†**, Lauren Waters. (2021) “Subcellular Localization Of MntS And Its Interaction With MntP In Manganese Homeostasis Of *E. coli*.” Annual UW System Symposium for Undergraduate Research and Creative Activity and University of Wisconsin Oshkosh Celebration of Scholarship and Creative Activities, Oshkosh, WI (*2 Online poster presentations*)

**Kalista Paszczak†**, Lauren Waters. (2021) “An Exploration of the Relationship Between the Small Protein MntS and the MntP Exporter Protein Regarding Manganese Homeostasis in *Escherichia coli*.” Annual UW System Symposium for Undergraduate Research and Creative Activity and University of Wisconsin Oshkosh Celebration of Scholarship and Creative Activities, Oshkosh, WI (*2 Online poster presentations*)

**Mollie Jentz†**, Lauren Waters. (2020) “Investigating Manganese Homeostasis in Bacteria Through MntS Protein Mutations” University of Wisconsin Oshkosh Celebration of Scholarship, Oshkosh, WI (*Online poster presentation*)

Katherine Senn†, Jennifer Schmitz†, Eli Martinez†, Rilee Zeinert†, Luke Seuffer†, Ellen Otto†, **Lauren Waters**. (2019) “Bacterial manganese and pH homeostasis: structure-function analyses of manganese transporters” 45<sup>th</sup> Annual UW System Chemistry Faculties Meeting, Oshkosh, WI. (*Poster presentation*)

Katherine Senn†, Jennifer Schmitz†, Eli Martinez†, Rilee Zeinert†, Luke Seuffer†, Ellen Otto†, **Lauren Waters**. (2019) “Bacterial manganese and pH homeostasis: structure-function analyses of manganese transporters” Molecular Genetics of Bacteria and Phages Meeting, Madison, WI. (*Poster presentation*)

**Lauren Waters.** (2019) “Incorporation of Active Learning Approaches, Just-In-Time Teaching, and Genuine Research Projects into Biochemistry Lecture and Laboratory Courses” Transforming Education in the Molecular Life Sciences ASBMB Educational Symposium, San Antonio, TX. (*Poster presentation*)

**Becca Amick†**, Lauren Waters. (2019) “Subcellular Localization of the Manganese Homeostasis Protein, MntS.” Annual UW System Symposium for Undergraduate Research and Creative Activity, University of Wisconsin Green Bay, Green Bay, WI and Celebration of Scholarship, University of Wisconsin Oshkosh, Oshkosh, WI. (*2 Poster presentations*)

**Kimberly Preissner†**, Lauren Waters. (2019) “Determining MntS native structure using Blue Native gel electrophoresis, SDS gel electrophoresis, and Western blot.” Celebration of Scholarship, University of Wisconsin Oshkosh, Oshkosh, WI. (*Poster presentations*)

**Luke Seuffer†**, Lauren Waters. (2019) “Assessing the Role of Alx, a Membrane Protein, in *Escherichia coli*.” Annual UW System Symposium for Undergraduate Research and Creative Activity, University of Wisconsin Green Bay, Green Bay, WI and Celebration of Scholarship, University of Wisconsin Oshkosh, Oshkosh, WI. (*2 Poster presentations*)

**Nathan Witman†**, Lauren Waters. (2018) “Determining the function of a small protein involved in the regulation of manganese homeostasis in *E. coli*.” Annual UW System Symposium for Undergraduate Research and Creative Activity, University of Wisconsin Green Bay, Green Bay, WI and Celebration of Scholarship, University of Wisconsin Oshkosh, Oshkosh, WI. (*2 Poster presentations*)

**Katherine Senn†**, Lauren Waters. (2017) “Investigating the Structure and Function of a Protein Involved in Manganese Homeostasis in *E. coli*.” University of Wisconsin Oshkosh Celebration of Scholarship, Oshkosh, WI. (*Poster presentation*)

**Lauren Waters.** (2016) “Higher Education for Tomorrow” and “Manganese Homeostasis in Bacteria: Characterization of a Mn-Regulated Small Protein and Identification of Novel Mn Exporters.” Cottrell Scholars Conference *Building Bridges*, Westin La Paloma, Tucson, AZ. (*Poster presentation*)

Rilee Zeinert†, Taylor Truttmann†, Katherine Senn†, Eli Martinez†, Adrian Landreth†, Ross Denholm†, Bakhtawar Usman†, Patrick Miller†, **Lauren Waters.** (2016) “Metal Homeostasis in *E. coli* and Beyond.” Molecular Genetics of Bacteria and Phages Meeting, Madison, WI. (*Poster presentation*)

**Jennifer Schmitz†**, Eli Martinez†, Lauren Waters. (2016) “Manganese Export Across Bacterial Species.” Molecular Genetics of Bacteria and Phages Meeting, Madison, WI. (*Poster presentation*)

**Eli Martinez†**, Rilee Zeinert†, Jennifer Schmitz†, Joseph Draven†, Lauren Waters. (2016) “Structure-Function Analysis of Manganese Exporter Proteins and Their Contribution to Reactive Oxygen Species Survival”, American Society for Biochemistry and Molecular Biology Annual Meeting, San Diego, CA. (*Poster presentation*)

**Eli Martinez†**, Rilee Zeinert†, Jennifer Schmitz†, Joseph Draven†, Lauren Waters. (2016) “Structure-Function Analysis of Manganese Exporter Proteins and Their Contribution to Reactive Oxygen Species Survival”, University of Wisconsin Oshkosh Celebration of Scholarship, Oshkosh, WI. (*Poster presentation*)

**Katherine Senn†**, Lauren Waters. (2016) “Characterization of Protein Isoforms Involved in Manganese Homeostasis in *Escherichia coli*.” Annual UW System Symposium for Undergraduate Research and Creative Activity, Stevens Point, WI and University of Wisconsin Oshkosh Celebration of Scholarship, Oshkosh, WI. (*2 Poster presentations*)

- Jennifer Schmitz**†, Lauren Waters. (2016) “Investigating Potential Novel Manganese Exporters Controlled by Riboswitch Mechanisms in an Array of Bacterial Species” Annual UW System Symposium for Undergraduate Research and Creative Activity, Stevens Point, WI and University of Wisconsin Oshkosh Celebration of Scholarship, Oshkosh, WI. (2 Poster presentations)
- Kyle Dobson**†, Lauren Waters, Eric Matson. (2016) “Mutagenicity Potential of Piperazine Smart Drugs Using the Ames *Salmonella*/Microsome Assay” University of Wisconsin Oshkosh Celebration of Scholarship, Oshkosh, WI. (Poster presentation)
- Eli Martinez**†, Lauren Waters. (2015) “Topological analysis of a manganese exporter protein, MntP, in *Escherichia coli*, and its response to Reactive Oxygen Species.” University of Wisconsin Oshkosh McNair Showcase, Oshkosh, WI. (Poster presentation)
- Rilee Zeinert†, Taylor Truttmann†, **Lauren Waters**. (2014) “Metal Homeostasis in *E. coli*: the Predicted Manganese Chaperone, MntS, and the Manganese Exporter, MntP.” Molecular Genetics of Bacteria and Phages Meeting, Madison, WI. (Poster presentation)
- Rilee Zeinert**†, Lauren Waters. (2014) “Elucidating the Structure and Function of MntP: A Manganese Export Protein”, University of Wisconsin Oshkosh Celebration of Scholarship, Oshkosh, WI. (Poster presentation)
- Taylor Truttmann**†, Lauren Waters. (2014) “Finding Specific Proteins That Bind to the Small Protein MntS in the Model Bacterium *Escherichia coli*.” Annual UW System Symposium for Undergraduate Research and Creative Activity, Milwaukee, WI and University of Wisconsin Oshkosh Celebration of Scholarship, Oshkosh, WI. (2 Poster presentations)
- Rilee Zeinert**†, Lauren Waters. (2013) “Characterization of the MntP Manganese Export Protein in *Escherichia coli*.” University of Wisconsin Oshkosh McNair Showcase, Oshkosh, WI. (Poster presentation)
- Rilee Zeinert†, Patrick Miller†, **Lauren S Waters**. (2013) “Characterization of Two New *E. coli* Manganese Homeostasis Proteins: the Predicted Manganese Chaperone, MntS, and the Manganese Exporter, MntP.” Molecular Genetics of Bacteria and Phages Meeting, Madison, WI. (Poster presentation)
- Kelly Genskow**†, Lauren Waters. (2013) “The *Escherichia coli* Small Protein MntS and Its Role in Manganese Homeostasis.” National Conference on Undergraduate Research, La Crosse, WI and University of Wisconsin Oshkosh Celebration of Scholarship, Oshkosh, WI. (2 Poster presentations)
- Patrick Miller**†, Lauren Waters. (2013) “Important Amino Acids Found In Manganese Transport Protein Pump.” Celebration of Scholarship, University of Wisconsin Oshkosh, Oshkosh, WI. (Poster presentation)
- Lauren S Waters**, Melissa Sandoval†, Gisela Storz. (2011) “Expanding the Manganese Regulon in *Escherichia coli*: a New Small Protein, MntS and Efflux Pump, MntP.” Cell Biology of Metals Gordon Conference, Salve Regina, Newport, RI. (Poster presentation)
- Lauren Waters**, Gisela Storz. (2010) “Characterization of a Novel Manganese-Regulated Small Protein in *Escherichia coli*.” Microbial Stress Response Gordon Conference, Mount Holyoke College, South Hadley, MA. (Poster presentation)
- Lauren Waters**, Mitsuoki Kawano, Gisela Storz. (2008) “Characterization of the Small RNA RyfD in *Escherichia coli*.” American Society for Microbiology 108<sup>th</sup> General Meeting, Boston, MA. (Poster presentation)
- Lauren Waters**, Mitsuoki Kawano, Gisela Storz. (2007) “Role of the Small RNA RyfD in the Stress Responses of *E. coli*.” 15<sup>th</sup> Annual International Conference on Microbial Genomes, College Park, MD. (Poster presentation)



**Lauren Waters**, Meisha Bynoe†, Graham C. Walker. (2004) “Novel Cell Cycle Regulation and Characterization of the Yeast Translesion Polymerase, Rev1.” ASM Conference on DNA Repair and Mutagenesis, Southampton, Bermuda. (*Poster presentation*)

## **TEACHING EXPERIENCE AND TRAINING**

### **University of Wisconsin Oshkosh, Oshkosh, WI**

Lab instructor, CHEM 102 General, Organic, and Biochemistry II  
Lab and discussion instructor, CHEM 105 General Chemistry I  
Lab and discussion instructor, CHEM 106 General Chemistry II  
Lead instructor, CHEM 303 Introductory Biochemistry I: Clinical Emphasis  
Lead instructor, CHEM 304 Biochemistry Laboratory  
Lead instructor, CHEM 315 Advanced Biochemistry II

### **National Institutes of Health, Bethesda, MD**

Instructor, Introductory Molecular Biology and Genetics  
Instructor, Becoming a Successful Scientist

### **Massachusetts Institute of Technology, Cambridge, MA**

Participant, Concept-Centered Teaching  
Instructor, MIT High School Summer Workshop on Meiosis  
Teaching Assistant, General Biochemistry  
Teaching Assistant, Experimental Microbial Genetics Project Lab

## **MENTORING EXPERIENCE**

### **University of Wisconsin Oshkosh, Oshkosh, WI**

37 undergraduate research students

### **National Institutes of Health, Bethesda, MD**

2 post-baccalaureate students

### **Massachusetts Institute of Technology, Cambridge, MA**

2 undergraduate research students, 2 graduate rotation students

## **AWARDS AND HONORS**

Faculty Mentor of the Year, University of Wisconsin Oshkosh (2023)  
Mentor of the Year, National Institute for Child Health and Human Development (2011)  
Fellows Award for Research Excellence (FARE) (2011)  
Fellows Award for Research Excellence (FARE) (2008)  
American Society for Microbiology Travel Grant to the DNA Repair and Mutagenesis Meeting (2004)  
Phi Beta Kappa National Honor Society (2000)  
Cornell University Dean’s List (1996 – 2000)

## **PROFESSIONAL DEVELOPMENT**

“Embedding Independent Research in Undergraduate Genetic Courses”, UGEN Workshop (2023, **presenter**)  
CETL “Meeting Students Where They Are: Teach Students How to Learn”, UWO (2022)  
Provost’s Teaching and Learning Summit on Becoming an Emerging Hispanic-Serving Institution (2021)  
“Teaching Science with Big Data” Workshop, ASBMB (2021)  
CETL “Supporting 1<sup>st</sup> and 2<sup>nd</sup> Year Student Success”, UWO (2021)

CETL “Preparing for Online Challenges Facing Students” Workshop, UWO (2021)  
 Cottrell Scholars Annual Conference *Reimagining Higher Education* (2021)  
 “Undergraduate Genetics Education: Pedagogy of a Pandemic” Workshop, NHGRI and MiniPCR (2021)  
 “Teaching and Assessing Writing”, Provost’s Summit Workshop, UWO (2020)  
 “Mentoring Undergraduate Research Remotely During COVID-19 and Beyond”, WISCUR Workshop (2020, **presenter**)  
 Computational Biochemistry Techniques Virtual Workshop, University of San Diego (2020)  
 CETL Online Teaching and Learning Summer Workshops (10 sessions attended), UWO (2020)  
 “Best practices in online teaching for BMB classrooms”, ASBMB Virtual Conference (2020)  
 Cottrell Scholars Annual Conference *Challenges and Opportunities with Online Education* (2020)  
 Focus Group for WiscAMP (Wisconsin Louis Stokes Alliance for Minority Participation) Program, (2020)  
 “Creating Accessible Classrooms and Boosting Success for Students with Hidden Disabilities”, UWO (2020)  
 “Communicating Science” Cottrell Scholars Workshop, ACS (2019, **organizer**)  
 Transforming Education in the Molecular Life Sciences, ASBMB (2019, **presenter**)  
 “Communicating Science: Promoting Your Research” Workshop, UWO (2019)  
 Cottrell Scholars Annual Conference *Personalizing Education* (2018)  
 IMAGE Grant Writing Workshop, ASBMB (2018)  
 Cottrell Scholars Annual Conference *Building Bridges* (2016, **presenter**)  
 Provost’s Teaching and Learning Summit on Sustainability, UWO (2016)  
 UW Oshkosh Inclusive Excellence Workshop, UWO (2016)  
 WiSCUR Conference on Course-Embedded Undergraduate Research (2015)  
 UW Oshkosh STEM Teaching Certificate, UWO (2015)  
 UW System Women & Science Spring Conference (2014)  
 “Innovative Teaching in Large Courses” Workshop, UWO (2014)  
 “Beginning a Research Program in the Natural Sciences”, Council on Undergraduate Research (2012)  
 “Grantsmanship”, Seminar and Round Table Discussion with NIGMS Program Officers, NIH (2011)  
 “Developing Teaching Statements, Syllabi, and Curricula”, NIH (2009)  
 “Conflict and Collaboration”, NIH (2009)  
 “Grant Writing 101—Parts I and II”, NIH (2009)  
 “Scientists Teaching Science”, NIH (2008)  
 Howard Hughes Medical Institute Education Seminar Series at MIT (2004, 2005)

## SERVICE AND OUTREACH

### *Notable Committees*

Member of the Oshkosh Student Scholarly and Creative Activities Board (2023 – present)  
 Member of the UW Oshkosh Student Academic Committee (2018 – present)  
 Member of the UW Oshkosh Institutional Biosafety Committee (2017 – present, Chair 2022)  
 Chair of the UW Oshkosh Chemistry Department Assessment Committee (Chair 2014 – present)

### *External Grant Review*

Fellowship Reviewer for NRSA F30, F31, F32 Awards, NIH (2023)  
 Fellowship Reviewer for SDE/GWIS (ΣΔΕ/Graduate Women in Science) (2021, 2018, 2016, 2013)  
 Grant Reviewer for Research Corporation for Science Advancement (2019, 2020)  
 Ad Hoc CAREER Grant Reviewer for the National Science Foundation (2018, 2016)

### *Internal Grant Review*

Proposal Reviewer for UW Oshkosh Faculty Development Grants (2018 – present)  
 Proposal Reviewer for UW Oshkosh Student-Faculty Collaborative Grants (2018)  
 Proposal Reviewer for UW Oshkosh Small Grants (2017)  
 Proposal Reviewer for UW Oshkosh Student-Faculty Collaborative Grants (2014)

### *Scientific Review*

Manuscript Reviewer for *Biometals* (2023), *Letters in Applied Microbiology* (2023), *PNAS* (2022), *Nature Chemical Biology* (2021, 2022), *FEMS Microbiology* (2022), *FEMS Microbiology Reviews* (2021), *Applied and Environmental Microbiology* (2022), *mBio* (2021), *Journal of Bacteriology* (2019, 2020), *Microbiological Research* (2016), *Molecular Microbe-Plant Interactions* (2016), *Molecular Microbiology* (2013)

Book Chapter Reviewer for American Chemical Society Books (2017)

Textbook Reviewer for *Molecular Biology: Principles of Genome Function 2<sup>nd</sup> Ed.* by Craig *et al.* (2013)

### *Other Activities*

New Faculty Mentor Program, UW Oshkosh (2020-2021)

Member of the UW Oshkosh Return to Research and Creative Activities COVID Working Group (2020)

“Communicating Science” Cottrell Scholars Workshop, ACS (2019, **organizer**)

Panelist for UW System Women & Science Advancing Young Women in STEM (2018)

Panelist for UW Oshkosh Introduction to Research and Creative Activities (2017)

### *Poster Judge*

Poster Judge for UW Oshkosh Celebration of Scholarship (2018)

Poster Judge for the 9<sup>th</sup> Annual Wisconsin Science and Technology Symposium (2016)

NIH Fellows Award for Research Excellence (FARE) Award Judge, NIH (2009)

NIH Postbaccalaureate Poster Session Judge, NIH (2009)